

REMARKS

Claims 24-28 and 61-85 are pending. Claims 24-28 and 61-72 are withdrawn from consideration. Claims 84 and 85 have been added. Claims 24, 25, 73, 83 and 84 are in independent form. Favorable reconsideration is requested.

Applicants submit that new Claims 84 and 85 are allowable over the art of record.

Independent Claim 84 is directed to a method for manufacturing a piezoelectric element structure having a supporting substrate and a piezoelectric film supported on the supporting substrate. The method comprises a step of forming on the supporting substrate a layer having a perovskite structure, a temperature at a time of formation of the layer being at least 500°C, and a step of cooling from the formation temperature at least to 450°C with a cooling speed of at least 30°C/minute.

According to Applicants' understanding, U.S. Patent 5,500,988 (*Moynihan et al.*), which was cited in the Office Action dated May 8, 2003, relates to a method of making a perovskite thin-film ink jet transducer. *Moynihan et al.* was cited in that Office Action (page 4) as teaching, *inter alia*, "forming the first and second layers to 800°C . . ." However, Applicants note that *Moynihan et al.* states that "the deposited PZT layer is then annealed by heating to 600°C. to 800°C. to allow grain growth" (col. 3, lines 29-31). Thus, *Moynihan et al.* teaches that the PZT layer is first formed, and then after formation, is heated to 600°C. to 800°C. for the purpose of annealing. Applicants submit that nothing in *Moynihan et al.* would teach or suggest a temperature at a time of formation of the layer being at least 500°C.

In that regard, Applicants note that independent Claim 73 recites, *inter alia*, forming on a supporting substrate, in this order, a first layer having a perovskite structure and

a second layer having a perovskite structure and zirconium, a temperature at a time of formation of the first and second layers being at least 500°C, and independent Claim 83 recites, *inter alia*, forming on a supporting substrate, in this order, a first layer having a perovskite structure and a second layer having a perovskite structure and an element for preventing crystallization growth during a thin film forming process, a temperature at a time of formation of the first and second layers being at least 500°C. In view of the above discussion of *Moynihan et al.*, Applicants submit that nothing in that reference would teach or suggest at least these features of Claims 73 and 83, respectively.

According to Applicants' understanding, EP 0 930 165 (*EP '165*), which was also cited in the Office Action dated May 8, 2003, relates to an ink jet head including a piezoelectric film comprising a first layer and a second layer each having a perovskite structure. However, *EP '165* is not seen to remedy the deficiencies of *Moynihan et al.* discussed above.

Since neither *Moynihan et al.* nor *EP '165*, whether taken singly or in combination (even assuming, for the sake of argument, that such combination were permissible), contains all of the elements of Claim 84, that claim is believed allowable over those references.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against Claim 84. That claim is therefore believed patentable over the art of record.

Claim 85 is dependent from Claim 84 and is therefore believed patentable for at least the same reasons. Since Claim 85 is also deemed to define an additional aspect of the

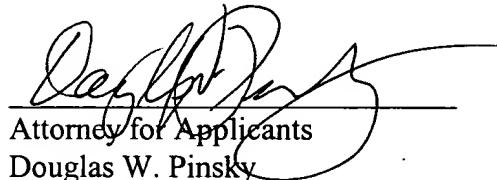
invention, however, the individual consideration of the patentability of that claim on its own merits is respectfully requested.

The other claims presented for examination in this application are deemed allowable at least for the reasons presented in the Amendment filed on August 8, 2003 and for the reasons discussed above with respect to independent Claims 73 and 83.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our Washington, D.C. Office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below- listed address.

Respectfully submitted,



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